was an immigrant from other shores, though it permits the thought that the American Indian may have originated on American soil.

Though this theory seems more probable than the other, which assumes that the languages of our Indians were brought here from foreign shores, it must be frankly admitted that linguistic science is not now and possibly never will be competent to decide between them. If she is unable to decide fully as to the origin of the Indians' languages, how can she be expected to solve the infinitely more complex problem which concerns the ultimate origin of the peoples who spoke them? She certainly has no solution for this problem now. When she considers the number of linguistic families, and the vast length of time it must have taken to develop their languages and dialects, she finds herself confronted by a problem beyond her present powers. And yet the case is not hopeless. Linguistic science is still in its infancy, and its future may contain possibilities far exceeding the dream of the most sanguine. As science has revolutionized the world's processes, and has made the impossibilities of a hundred years ago the common-places of to-day, so like wonders may be achieved in the domain of thought, and the science of Language, with the assistance of her sister sciences, may yet answer the unanswerable questions of the present. . . .

When interrogated as to the origin of the Indian, all that she can now say is that, whether the Indian originated on this continent, where he was found, or elsewhere, it was in bygone ages—ages so far removed from our own time that the interval is to be reckoned, not by the years of chronology, but by the epochs of geologic time; with such problems she affirms that at present she cannot deal.

THE NEW OBSERVATORY IN CATANIA.

We learn from the *Corriere di Palermo* the following details concerning the new Observatory at Catania, in which active work is about to begin. For many years astronomical studies were carried on with success in the Observatory at Palermo, but owing to the great drawbacks arising from the position of this institution (amongst which the most serious was the close proximity of a railway), it became exceedingly difficult to make precise observations. Some of the astronomers of the Observatory preferred to devote themselves to researches in astronomical physics, in which the inconveniences were less felt, while others who continued to occupy themselves with astronomy of position had to contend against ever-increasing difficulties. The Government, being informed of the state of affairs, nominated in 1888 a Commission to select a more suitable spot, and to make arrangements for a new Observatory; and the only place found suitable was the mountain Consuono, near Bagheria. As an Observatory built there would have the most perfect conditions of quiet and stability, it was decided that it should be devoted to the ancient and classical branch of astronomy of position.

In the meantime, several years ago, a new Observatory had been built on Etna (at a height of 3000 metres), through the activity of Prof. Tacchini, and the approval and help which the project found in Catania. Prof. Tacchini, recognizing the necessity that the Observatory at Etna should be joined with another, that it might work with greater regularity, succeeded in inducing the Government to build and organize the Observatory connected with the University in the town of Catania. This institution is destined principally for the study of astronomical physics, for celestial photography, for meteorology, and for seismology. Direct astronomical and spectroscopical observations will be made for the most part in the upper story of the Observatory with the great refractor, which has an objective of 35 centimetres in aperture and 5½ metres in focal length. It was made by the celebrated Merz at Munich, and the equatorial mounting was executed by the able mechanician Cavignato, of Padua, under the direction of the astronomers Lorenzoni and Abbeti, of that town. Other observations will be made with the equatorial of 15 centimetres in aperture, constructed by the renowned American, Clarke, to which an apparatus can be added for the photographing of stellar spectra. This instrument will be placed in the garden of the Observatory, liberally given by the Municipality of Catania.

In the same place, in a suitable pavilion, will be fixed the photographic telescope, with an objective of 33 centimetres in aperture. This was constructed by Steinheil, and the mounting was made under the direction of Prof. Tacchini in the premises of the clever mechanical engineer, Salmsiraghi, at Milan. With this instrument the Observatory at Catania will take part in the great international enterprise of preparing photographic charts of the stars. In the same garden the apparatus of Huggins will be set up, which serves for the photographing of the solar corona. Besides, at the Observatory on Etna, there is an equatorial, equal to that of the great refractor; and to this it will be possible to apply the same objective of Merz, and another which, for special observations, astronomical and physical, will be taken to the volcano.

Observations in meteorology will be made, some in the upper story of the building, where the apparatus of Mascart for the photographic registration of atmospherical electricity will be worked. Other meteorological observations will be made in the garden; and the Observatory on Etna will be furnished with a collection of meteorological and seismological instruments capable of automatic registration at times when the Observatory will be inaccessible. The seismological instruments will be by degrees removed from the University of Catania, where they are now collected, to a far more suitable place—to the vast subterranean rooms of the Observatory; thus, in the network of stations, this institution will take the first place for the seismological service of Sicily and the adjacent islands.

Prof. Riccò has been appointed regular Professor of Astronomical Physics in the University of Catania, and Director of the two Observatories. He is a member of the International Committee for photographing the stars.

NOTES FROM THE OTAGO UNIVERSITY MUSEUM.

X.—Three Suggestions in Biological Terminology.

(1) Mr. R. J. HARVEY GIBSON has recently criticized my proposal to use the terms *gamobium* and *blastobium* for the sexual and asexual generations respectively in both plants and animals, and has given some very good reasons for objecting to the latter term.[1] I therefore propose to replace it by *agamobium*, using the word simply as a monomial equivalent of "asexual generation," *gamobium* being similarly employed for the sexual generation. Both terms are equally applicable to plants and animals, and to the various kinds of alternation of generations.

(2) Mr. Gibson, while using the word *ovarium* for the female gonad or ovum-producing organ both in plants and animals, objects to my employment of the anglicized form of it (ovary), because of the confusion arising from the fact that the name is applied to something quite different in Angiosperms. My own impression is that reforms of this kind should be thorough, and that, if it is once admitted that terms of fundamental importance should not be used in one sense for animal and in a totally different sense for vegetable organisms, it would be the ruin of the whole scheme to be obliged to describe the ovarium of an Angiosperm as something contained within an ovule, which is itself enclosed in an ovary. We have already the accurate word megasporangium for the ovule, and I propose to speak of the so-called ovary, by a purely descriptive term, as the *venter* of the pistil.

(3) Every zoologist must acknowledge the services rendered by Haeckel and others in giving names to the more important embryonic stages of animals. It appears to me desirable that the equally important stages in plant development should be similarly emphasized.

In the paper already referred to I have proposed that the one-celled embryo, *i.e.* the immediate product of the conjugation of ovum and sperm should be universally called the *oosperm*, the objectionable name oospore being dropped.[2]

In mosses and vascular plants, as in animals, the next stage of importance after the oosperm is that in which the embryo consists of a mass of undifferentiated or but slightly differentiated cells. It is a matter of minor importance that in some cases a long axis is already obvious, or that in others an apical cell is formed: the stage may be conveniently distinguished by Lan-

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[1] See Gibson, Proc. Biol. Soc. Liverpool, vol. iv. (1889) p. 24; *ibid.*, 1887; and Parker, Proc. Austr. Assoc. Adv. Sci., vol. i. (1888).

[2] May I venture to protest against the extended use of the word oosperm sanctioned by my friend Prof. Haddon, who, in his excellent "Embryology," uses it (p. 91) for an advanced mammalian embryo with membranes?

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kester's name *polyplast*, which is to be preferred to Haeckel's *morula*.

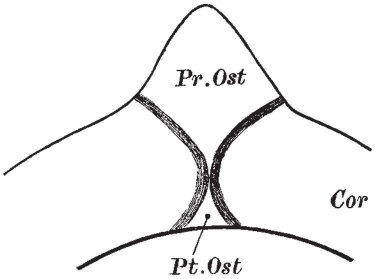
In mosses, the agamobium never gets beyond this stage, the fully formed sporogonium being nothing more than a highly differentiated polyplast. But as in animals the polyplast is succeeded by a gastrula, *i.e.* a stage in which the characteristic organ of animal nutrition has appeared, so in vascular plants it is succeeded by a stage in which the characteristic organs of plant nutrition—the leaf and root—have made their appearance. From ferns up to Angiosperms the first important differentiation after the polyplast is the formation of a cotyledon and of the primary root. This stage, the obvious correlative of the animal gastrula, I propose to call the *phyllula*.

XI.—On the Presence of a Sternum in *Notidanus indicus.*

As far as I am aware, nothing answering to a sternum has hitherto been found in fishes, the Urodela being the lowest group in which this constituent of the skeleton is known. In them it consists of a median plate of cartilage formed from paired chondrites (independent cartilaginous elements) developed in the inscriptiones tendineæ immediately caudad of the coracoids, and in close connection with them. In many Anuræ there is found in addition a median element cephalad of the procoracoids. The entire Amphibian sternum is conveniently called by Albrecht the *omosternum*, to distinguish it from the costal sternum of Amniota; the anterior division (omosternum, W. K. Parker) being called the *pre-omosternum*, the posterior division (xiphisternum, auct.) the *post-omosternum*. According to Wiedersheim ("Grundriss," 2te Aufl., p. 58), the phylogeny of the Amphibian sternum is still entirely unknown.

In Elasmobranchs the shoulder-girdle has the form of an inverted arch, usually formed of a single continuous cartilage, due to the union in the middle ventral line of paired elements, one connected with each pectoral fin. In Hexanchus (Notidanus) the right and left sides are described by Hubrecht ("Bronn's Thierreich," Fische, p. 77) as being united by fibrous tissues.

In a skeleton of *Notidanus indicus*, recently prepared for this Museum, the middle region of the shoulder-girdle has the structure shown in the figure. It is produced in front into a blunt process, while it is evenly curved posteriorly. Two curved areas of fibrous tissue, with their convexities towards the median plane, extend from the anterior to the posterior border, touching one another in the centre, and thus bounding two distinct cartilaginous areas—an anterior (*Pr. Ost.*) of a rhomboid, and a posterior (*Pt. Ost.*) of a triangular form. The anatomical relations of these seem to show that the former is to be considered as a pre-omosternum, the latter as a post-omosternum.



Median ventral region of the shoulder-girdle of *Notidanus indicus*, ventral aspect (natural size). *Cor.*, coracoid region: *Pr.Ost.*, pre-omosternum; *Pt.Ost.*, post-omosternum.

The specimen in question appears to furnish a very good indication of the phylogeny of the sternum, and to show that it arose in the first instance by the segmentation of a mid-ventral element from the shoulder-girdle, in much the same way as the basi-hyal and basi-branchials are formed from the hyoid and branchial arches.

T. Jeffery Parker.

Dunedin, N.Z., September.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

Cambridge.—Prof. M. J. M. Hill, of University College, London, has been approved for the degree of Doctor in Science.

Mr. H. W. Page, M.C., M.B., of Christ's College, has been appointed an additional Examiner in Surgery.

A. H. L. Newstead, B.A., of Christ's College, has been appointed by the Biology Board to occupy the University table in the Laboratory of the Zoological Station at Naples for six months from December 15, 1890.

Mr. J. Y. Buchanan, F.R.S., University Lecturer in Geography, announces a course of lectures in Physical Geography and Climatology for the ensuing Lent and Easter Terms.

The Clothworkers' Exhibition of fifty guineas a year in natural science for non-collegiate students will be awarded next July. Candidates are to apply to the Censor of Non-Collegiate Students.

The General Board of Studies recommend that Mr. R. T. Glazebrook, F.R.S., be appointed Assistant Director of the Cavendish Laboratory. Mr. Glazebrook resigns the Senior Demonstratorship which he has hitherto held.

A very interesting account is published in the *University Reporter* of December 9, 1890, of the course of study in natural science pursued by the University Extension students who were resident in Cambridge during the last Long Vacation. The course included invertebrate palæontology, practical chemistry, and physics. Courses were also given in Greek art, architecture, Egyptology, &c. The Lectures Committee recommend that the experiment be repeated on a larger scale next year.

Additional demonstrators in physiology and in experimental physics are about to be appointed, to be paid out of the laboratory fees of students.

SCIENTIFIC SERIALS.

The *Quarterly Journal of Microscopical Science* for November 1890 contains:—On the structure of a new genus of Oligochæta (Deodrilus), and on the presence of anal nephridia in Acanthodrilus, by Frank E. Beddard (plates xxxii. and xxxiii.). This large worm, *Deodrilus jacksoni*, measuring thirteen inches in length by nearly half an inch in diameter at the broadest part, was collected by Prof. Moseley in Ceylon; the nephridia in a species believed to be *Acanthodrilus multiporus* are described as connected with the terminal region of the intestine.—Excretory tubules in *Amphioxus lanceolatus*, by F. Ernest Weiss (plates xxxiv. and xxxv.). At the Zoological Station in Naples, the author was able to have a constant and unlimited supply of Amphioxus, and he took the opportunity of experimenting with the view of determining whether the curious patches of modified epithelial cells on the ventral wall of the atrium of Amphioxus had any excretory function, as Johannes Muller had held to be probable; and whether, also, the atrio-cœlomic funnels, first described by Prof. Ray Lankester, had any such function; positive results were not obtained.—Studies in mammalian embryology; ii. The development of the germinal layers of *Sorex vulgaris*, by Prof. A. W. Hubrecht (plates xxxvi. to xlii.). Giving a brief but very lucid sketch of the various views held by recent writers concerning the gastrulation process of the Amniota and the formation of their mesoblast and notochord, placing what is agreed on on the one side, and indicating the points of difference on the other, without any polemical remarks, the author proceeds to an account of the early developmental stages of Sorex, the blastula and the didermic blastocyst, the development of the mesoblast; then follow some theoretical considerations on the gastrulation of the Mammalia, concluding with points of comparison in earlier investigations by other authors.—Terminations of nerves in the nuclei of the epithelial cells of tortoiseshell, by Dr. J. B. Haycraft (plate xliii.). The scutes of the land tortoise (*Testudo græca*), in spite of their hard, dense nature, form a very typical epidermic sensory covering for the animal. As in the soft skin of mammals, the nerves end in localized sensitive spots in the epidermis, and before penetrating this tissue they form a horizontal plexus in the upper part of the connective tissue; figures of the nerve-endings are given.

SOCIETIES AND ACADEMIES.

London.

Royal Society, November 27.—"The Variations of Electromotive Force of Cells consisting of certain Metals, Platinum, and Nitric Acid." By G. J. Burch and V. H. Veley.

The description of the apparatus, the capillary electrometer,

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